REMARKS

Applicant appreciates the time taken by the Examiner to review Applicant's present application. This application has been carefully reviewed in light of the Office Action dated November 20, 2006. This Reply encompasses a bona fide attempt to answer the questions raised by the Examiner and to present amendments as well as reasons why Applicant believes that the claimed invention, as amended, is novel and unobvious. Support for the amendments present herein can be found in the Specification as originally submitted. In particular, support can be found in paragraph [0057] for Claim 1, paragraph [0050] for Claim 10, and paragraphs [0037]-[0041] for Claim 57. No new matter is introduced. No claim is newly added. Claims 63-67 were previously cancelled per a preliminary amendment submitted January 30, 2004. Claims 1-62 and 68 remain pending.

Before answering the Examiner's questions in detail, Applicant respectfully submits the following for the Examiner's consideration.

Embodiments of the invention are directed to an optical switching architecture that provides full, non-blocking routing of data packets. The optical switching architecture includes an optical switch fabric that provides a unique switch path from each input link to each output link, to ensure that no blocking or congestion will occur at the optical switch fabric.

As an example, in the embodiment shown in FIGURE 4, the optical switch fabric 70 of an optical router 50 will allow all of the data, or any fraction thereof, to be transferred simultaneously from the ingress edge units 60 of the optical router 50 to the egress edge units 160 of the optical router 50 in a non-blocking manner. *See* Specification, pages 13-14, paragraph [0036]. The non-blocking feature of the optical switching architecture is described in detail with reference to FIGURE 5. More specifically, in the example shown in FIGURE 5, the optical switch fabric 70 resides in the optical switch core 30 of the optical router 50 of FIGURE 4. A switch core controller 40, which also resides in the optical switch core 30 and which may implement a switch controller 38

and a super packet scheduler 42, coordinates the actual switching within the optical switch fabric 70 based on the information processed from the ingress edge units 60. *See* Specification, page 14, paragraph [0037]. To assure the transmission to a given egress edge unit 160 is accomplished without collision or data loss, the switch core controller 40 performs at least three distinct control functions within the optical router 50, one of which is establishing patterns for delivery of super packets from the ingress edge units 60 to the optical switch fabric 70. *See* Specification, page 15, paragraphs [0038]-[0039]. Specifically, the super packet scheduler 42 develops a pattern that is delivered to the switch controller 38 for use by the switch controller 38 to open and close paths (e.g., via switching elements 78, 55 and path switches 56) through the optical switch fabric 70. *See* FIGURES 6, 7, and 8. Each pattern is thus established to avoid congestion and/or overload of the egress super packet links 33 between the optical switch fabric 70 and the egress edge units 160. *See* Specification, pages 16-17, paragraphs [0040]-[0041].

Depending upon design and application needs, the non-blocking optical switching architecture can be implemented in many ways. For example, rather than being a part of the switch core controller 40 (as shown in FIGURE 5), the switch controller 38 can be an integral part of the optical switch fabric 70 (as shown in FIGURE 6). Similarly, the optical switch fabric 70 can be implemented in many ways without changing its base architecture, so long as the switch controller 38 can open and close paths within the optical switch fabric 70 according to the non-blocking patterns established or modified by the switch core controller 40. For example, rather than employing an optical cross-bar switch 72 (as shown in FIGURE 6), the optical switch fabric 70 can utilize an optical switching matrix 85 (as shown in FIGURE 7) or multiples of switching matrices 72 and/or 85 linked together (as shown in FIGURE 8). In all cases, including those shown in FIGURES 6, 7, and 8, the optical switch fabric 70 provides a unique path between every ingress edge unit 60 and each egress edge unit 160. *See* Specification, pages 19-28, paragraphs [0048]-[0063]. For similar reasons, switching elements and corresponding path switches within each switching matrix can also be implemented in many ways, so long as they are capable of transporting optical data through the optical

switching matrix. *Id.* at paragraphs [0049] and [0056]. In other words, while FIGURES 6, 7, and 8 may show different embodiments of the optical switch fabric 70, the underlying non-blocking functionality of the optical switching architecture, which the optical switch fabric 70 embodies, is consistent from implementation to implementation.

Applicant's Response to the Examiner's Questions

The Examiner states that in Claim 57, "the optical switching matrix" lacks antecedent basis. For the convenience of the Examiner, the original Claim 57 is reproduced below:

> 57. (Original) A method of routing optical data packets comprising:
> receiving a data packet on an input;
> configuring an optical switching matrix to create a plurality of unique paths through the optical switching matrix;
> routing the data packet to an output according to a unique path from the plurality of unique paths.

The antecedent basis for "the optical switching matrix" at line 4 of Claim 57 can be found at line 3, "an optical switching matrix".

The Examiner states that "in the drawings, there are no means to provide the filtering and amplifying of claims 6-7, 17-18, 29-30, 41-42 and 55-56." Applicant respectfully disagrees. The drawings clearly show means for providing the filtering and amplifying of claims 6-7, 17-18, 29-30, 41-42 and 55-56. For example, FIGURE 6 shows optical receiver(s) 74 and optical transmitter(s) 76. The Examiner's attention is respectfully directed to page 19 of the Specification which describes, in paragraph [0048], "Optical cross-bar switch 72 can optionally include optical receiver(s) 74 and optical transmitter(s) 76 which can be used to filter and/or amplify incoming signals upon receipt at the optical cross-bar switch 72 (i.e., at the optical receiver(s) 74) and just prior to exiting the optical cross-bar switch 72 (i.e., at the optical transmitter(s) 76) as necessary depending on the noise in the signals and the distance the signals must travel." Also, on page 21, paragraph [0051], "In operation, optical data packets or super packets can be received at the optical receiver(s) 74 on the ingress side, amplified and/or filtered as necessary, and transmitted through the optical cross-bar switch 72 to the optical transmitter(s) 76 on the egress side of the optical cross-bar switch 72."

Similarly, FIGURE 7 shows optical receiver(s) 84 and optical transmitter(s) 86, which are described in paragraph [0055] on page 23 of the Specification, "Optical switch fabric 70 can once again optionally include optical receivers 84 and optical transmitters 86, which can be used to filter an/or amplify signals upon receipt at the optical switch fabric

70 (i.e., at the optical receivers 84) and just prior to exiting optical switch fabric 70 (i.e., at optical transmitters 86), as necessary, depending on the noise in the signals and the distance the signals must travel."

Actual implementations of the optical receivers and optical transmitters can vary so long as they are operable to filter and/or amplify optical signals arriving at and leaving the optical switching matrix. Thus, in embodiments of the invention, any suitable optical receivers and optical transmitters may be utilized to implement these optional features (e.g., filtering, amplification, etc.). These optional features do not materially affect the non-blocking functionality of the optical switching architecture.

Conclusion

Applicant has now made an earnest attempt to place the present application in condition for allowance. Other than as explicitly set forth above, this reply does not include any acquiescence to statements, assertions, assumptions, conclusions, or any combination thereof in the Office Actions. Favorable consideration and a Notice of Allowance of all pending claims 1-62 and 68 is earnestly solicited. The Examiner is invited to telephone the undersigned at the number listed below for discussing an Examiner's Amendment or any suggested actions for accelerating prosecution and moving the present application to allowance. The Director of the U.S. Patent and Trademark Office is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-3183 of Sprinkle IP Law Group.

Respectfully submitted,

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